

Randomly selected science and mathematics teachers in government schools

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Abstract

Action research is viewed as a path towards better student achievement. This track may be attained through the reflective nature instilled in the teacher that sparks initiatives to promote better classroom practices in the aspects of pedagogy, assessment, and parental involvement. This descriptive survey explores Filipino teachers' conceptions of and needs on action research which may be barriers to implementing action research in their classrooms. Participants were randomly selected science and mathematics teachers in government schools in the Philippine's capital city. Their concepts about action research were investigated by a survey and interviews, which indicated that they had positive views about action research helping to develop student learning in science and mathematics, and promote lifelong learning. Teachers' prior concepts on its long-lasting impacts transcend from instructional practice to addressing student problems. Furthermore, their perceived moderate level of difficulty in conducting action research indicated some areas needing professional development programs, such as statistics, data organisation, literature searching, and writing reports. Recommendations include professional development training programs to address issues in classroom practices through action research and for the Philippine government to review workloads of teachers and provide them with better opportunities for theory-practice-influenced teaching.

All learners in this era need different sets of skills to: 1) survive in highly competitive workplaces; 2) develop into an engaged citizen; and 3) achieve global standards to become part of the global community. UNESCO (2014) asserted that quality education and training equip people with skills, knowledge, and attitudes to obtain decent work; live together as active citizens nationally and globally; understand and prepare for a world in which environmental degradation and climate change present a threat to sustainable living and livelihoods; and understand their rights. Consequently, this international agency demarcated the teachers' role in ensuring quality education and learning, which is anchored on their overarching goal, Ensuring equitable, quality education, and lifelong learning for ALL by 2030.

Regional (Association of South East Asian Nations, ASEAN) efforts to define quality surfaced in the light of quality assurance. Quality assurance takes into consideration process-related accountability inclusive of standards and academic development, consequently directed to the ASEAN Qualifications Reference Framework (AQRF) (Manzala, 2012). AQRF functions as a device to enable comparisons of qualifications across ASEAN member countries that addresses the education and training sector with a wider objective of promoting lifelong learning.

In the Philippines, efforts to attune the country to the regional and global contour directed at quality and accountability led to instituting the Philippine Qualification Framework (PQF, 2012). With PQF, all education sectors are tasked to make detailed descriptors for each qualification level based on learning standards in basic education; competency standards of training regulations; and the policies and standards of higher education academic programs. Guided by the vision, mission, and goals of PQF, educational institutions are mandated to contribute to building a quality nation capable of transcending the social, political, economic, cultural, and ethical issues that constrain the country's human development, productivity, and global competitiveness. Specifically, Philippine universities and colleges are tasked to help the education system by providing timely and appropriate professional development programs. These programs are deemed necessary to develop professionals, especially teachers, to achieve high levels of academic, thinking, behavioural, and technical skills/competencies that are aligned with the national academic and industry standards, and needs and international standards, when applicable. Apparently, the Commission on Higher Education (2015) and the Department of Education (2012) subscribe to the 3-5-day teacher training on the

pedagogical-content-knowledge of teachers and highlight specific pedagogical approaches to specific disciplines. In science and mathematics, for example, teachers are trained on inquiry learning and science and mathematics student investigation. There are only a few training on practising reflective teaching through action research, which may be brought about by the current transition in the Philippine education system from a 10-year basic education to a 12-year program as is common to all neighbouring Asian countries (Department of Education, 2010). Teachers' clamour for this training is not documented, yet they are required to conduct action research each year as part of their standard outcome for them to be promoted to a higher level in their career stages (Department of Education, Order No. 42, s. 2007). Thus, this study focused on professional development for educators to increase their use of action research that can improve educational outcomes for students in science and mathematics. Consequently, this study surveyed teachers about their concepts of action research, including their preferred areas of study, perceived needs, and challenges when conducting research.

Purposes of the research

This study assessed teachers' conception of and needs in conducting and implementing action research. Specifically, the study sought answers to the following questions:

What are teachers' conceptions of action research?

What are teachers' preferred areas of study?

What are the needs and challenges for teachers in conducting action research?

Literature review

In education, Darling-Hammond and Berry (1998) recounted that teachers play significant roles in the success of educational reform. Qualified and skilled teachers are agents of positive societal change and have a multiplying effect through touching the lives and moulding the hearts of learners. Thus, academia pursues good quality teacher development. One powerful form of professional development for teachers is the use of action research (Johnson & Button, 2000; Johnson 2012). In fact, Mills (2011) claimed that action research, within the realms of education, aims to determine ways to enhance the lives of children by studying the classroom situation to understand and improve the quality of teaching and learning processes (Hensen, 1996; Johnson, 2012). Furthermore, Mills (2011, 2014) and Stringer (2008) believed in the principles of action research that emphasise the use of systematic process in gaining insights, developing reflec-

tive practice, effecting positive changes in the school environment, and improving student outcomes and the conditions of those involved. These capabilities of action research bring in an increased sense of professionalism in education (Hine, 2013; Hine & Lavery, 2014; Tomlinson, 1995). Self-evaluation and reflection (Ado, 2013) are emphasised in the conduct of action research which improve teachers' reflective practice in the classroom.

In the same vein, Johnson (2012) affirmed that action research bridges the gap between theory and practice. Thus, teachers' capabilities to become a researcher-practitioner come into play, making them fully aware of how they decide to make their class more interactive, more learner-oriented, more productive, and more meaningful to the lives of their students (Johnson, 2012). While teacher education programs aim to develop the knowledge, skills, and attributes of pre-service teachers in order to prepare them to teach effectively in the 21st century classrooms, they also strengthen and enhance their professional development programs for in-service teachers to continually and progressively upgrade skills and standards to match the necessary learning skills to be developed. Professional development programs, especially in the research field, however, may only achieve their goals if properly programmed, based on the needs and the current state of in-service teachers in connection with their new roles in the educational reform. In effect, designing teacher development programs would need, as inputs, teachers' conceptions of and needs on the believed tool (action research) for education quality. These are the necessary principles in developing an appropriate and effective teacher professional development program to achieve the goal of quality in education.

Action research and its benefits to education

With the aim of social change, the concepts of action research were first established by Lewin (1948) primarily to improve researchers' capacity and practices over the production of theoretical knowledge. In his principle, social change may be achieved through research-in-action. From this initiative, several other definitions of action research and uses in the education realms surfaced. Stenhouse (1975, p.142) brought the concept of action research (AR) to the educative process and advocated that 'curriculum' research and development ought to belong to teachers. Consequently, he quotes, "it is not enough that teachers' work should be studied; they need to study it themselves." More recent descriptions of action research highlight the educative process as a systematic study of school situation to understand and improve the quality of education provided by

teachers (Hensen, 1996; Johnson, 2012; McTaggart, 1997). Particularly, Reason and Bradbury (2008) used the same principle and led other researchers to apply AR in different ways within the education domain. As a result, James, Slater and Bucknam (2012) conveyed that different ways of applying action research in education conceived different names in the process: action science (AS), community-based participatory research (CBPR), action learning (AL), appreciative inquiry (AI), living theory (LT), participatory action leadership action research (PALAR), and participatory action research (PAR). Although action research is now known in different names, all these terms are still dedicated to the critical analysis of classroom practice and the outcomes of teachers' action on the learners (Coghlan & Miller, 2014; Hine & Lavery, 2014). Some researchers identified the different benefits teachers may derive from action research: 1) bridge the gap between theory and practice (Johnson 2012); 2) help teachers develop new knowledge related to their classroom practice (Hensen, 1996); 3) facilitate teacher empowerment (Fueyo & Koorland, 1997), so that teachers are able to use their classroom data in making decisions about their schools and their classrooms (Book, 1996; Erickson, 1986, Hensen, 1996; Zeichner & Noffke, 2001); and 4) an effective way of professional growth and development (Osterman & Kottkamp, 1993) that promotes self-improvement and self-awareness (Judah & Richardson, 2006).

Particularly, action research's collaborative nature (Noffke, 1997; Reason & Bradbury, 2001) highlights the partnership of the researcher and the practitioner to give importance to this trait and bring about large-scale outcomes to a wider community of stakeholders. Whyte (1991) defined PAR to comprise participatory research, praxis, participatory inquiry, collaborative inquiry, action inquiry, and cooperative inquiry. In this research field, collaborating participants define the problem within the local setting to produce knowledge and action directly targeting their identified problem. This scheme empowers the participants to full and deep processing through research, knowledge construction, action, and use. Kindon et al. (2007) acknowledged that PAR still involves the recurrent stages of action research: planning, action, reflection, and evaluation. In fact, Pain, Whitman and Milledge (2011) considered PAR to have seven central themes: collaboration, knowledge, power, ethics, building theory, action, and emotion and well-being, in which reflective practice comes in each of this domain as the team goes through the research process. As a team-oriented practice, PAR may bring about change and improvement in the community of practice and may contribute substantially to educational reforms.

The majority of literature found AR to provide many benefits to teachers and educators. In a study in 2007, Brookmyer (2007, quoted by Pine, 2009a:36) found that among 114 teachers who conducted action research, 85% believed that it is an important information base for reflective practice; 89% acknowledged AR as a vital foundation on which to develop professionalism; 84% believed that AR provides valuable knowledge for classroom practice; and 75% claimed that AR provides a context for the transformation of practice. In the same vein, Hine and Lavery (2014) reported the importance of action research as a valuable methodology, its impact on the school community, and challenges encountered when conducting action research. Many researchers also acknowledged that classroom research is a way of improving reflectivity that helps improve various facets of learning (Alber & Nelson, 2002; Falk & Blumenreich, 2005; Mills 2003). These realisations in AR also reveal that its goals are like those of reflective practice, improved and changed, developed, effective, efficient, and empowered teachers in action.

Related studies on teachers' conceptions of and needs on action research

Achieving the goal of developing empowered practitioner-researchers requires quality programs for professionalisation. This approach to quality requires identification of teachers' conceptions of AR and their eventual needs that will serve as bases in conceptualising and designing teacher professional development programs. Goodman (1986) confirmed that teachers' held beliefs enable them to make crucial decisions on classroom practices. Thus, their beliefs on AR might direct their capability and engagement to such. Glanz (2003) recognised that the majority of teachers often fear getting involved in classroom research, and they do not see how research can benefit their work because they lack the knowledge and training to see these connections. Although some literature (Ary, Jacobs, Sorensen, 2010; Carr & Kemmis, 1986; Dornyei, 2007) reported the significance of AR in practice, McDonough (2006) found that teachers do not regard research as one of their primary responsibilities. Furthermore, teachers hold that performing research must be done by experts, but they do not reject the idea that research is possible in the classroom. McDonough (2006) also found that teachers thought that performing research needs familiarity with research skills. These teachers even thought that they needed rigorous training such as a master's degree or professional development programs in order to acquire research skills. Specifically, the same set of teachers identified AR as problem-focused. They also re-

ported that they were that good in identifying a problem worthy of research, that statistics is a difficulty for them, and that they do not see its worth in AR (Burns, 2010). In addition, Burns reported that teachers identified several areas on which teachers need further awareness and training: 1) identifying an initial idea; and 2) systematically defining and implementing methods designed for the initial idea. Thus, Burns hold that most teachers may be acquainted with theories of AR but still need further support and clarification in action research.

As presented in the aforementioned literature, teachers have varied conceptions about action research. These teachers, who wanted to provide quality education to their learners, also expressed the need for the process to gain the cited benefits of the educative process (action research). The feasibility of using action research for teacher training and professional growth and development already swamped the literature with ways and means; thus, its applicability in the Philippine setting is not impossible. With this idea of professional teacher development in mind, it is a necessity that researchers are provided with baseline data on the Philippine teachers' concepts of and needs on action research for teacher professional development design and customisation, aimed to eventually achieve quality education provided by capacitated teachers.

Methods

The researchers used a descriptive survey method combining quantitative (using a checklist and rating scale) and qualitative approaches (interview and open-ended questions) to assess teachers' concepts of and needs on action research in the specified aspects: 1) components of action research; and 2) products and outcomes of action research. A developed and validated survey instrument (see Appendix) on action research determined the conceptions of and needs on action research in terms of the identified constructs. Instrument development included literature review and initial interviews with teachers providing detailed descriptions of their conceptions of and needs on action research. The researchers thematised the teachers' answers in a pilot study conducted through interviews. The generated themes served as the bases for the items and constructs of the checklist, rating scales, and the open-ended section of the instrument. Interview questions in the pilot study included questions decoded as thus:

Instrument validation included descriptive validation and evaluation on content and visual presentation by three experts. Their comments and suggestions directed the revisions and finalisation of the instrument.

Participants

Participants in the study were 300 basic (elementary and secondary) education teachers of the Philippine Department of Education, Division of City Schools-Manila. Since the university affiliation of the researchers is situated in the Philippines' capital city (Manila), convenience and purposive sampling determined the division or unit in the education agency from which the participants were randomly selected. These participants are science and mathematics teachers actively teaching in the government-owned and supervised schools, teaching in the elementary and secondary or high school levels.

The type of survey instrument ensured anonymity of the respondents in which the researchers communicated in a general correspondence as noted in the first part of the instrument (Appendix). This process maintained anonymity and ethical standards as prescribed and approved by the research ethics board of the University. The education agencies' identified supervisor-collaborators facilitated the distribution, monitoring, and retrieval of the completed surveys from the participants. Completed surveys were retrieved during August and September, six months after the distribution in March 2015, attaining 85% return.

Analysis of the collected data included the following: 1) determining the mean scores and standard deviations; tallying and frequency counting for the checklist section; and 2) coding and thematising the participants' responses to the open-ended section of the survey instrument. Critical review and analysis of the coded and thematised qualitative data generated the themes and their corresponding descriptions in tabular format which, in tandem with the analysis of descriptive statistics, provided the impact of conducting action research as perceived by the teacher participants.

Results and discussion

Action research can help improve teaching. You can discover new techniques and strategies that can help improve teaching learning. It can help me in choosing the kind of methods/strategies that suit my pupils. Through research, you can discover the most effective instruction practice/materials in teaching that you may use for the improvement of pupil learning).

A number of teachers also indicated that doing action research can help them manage problems in their classrooms, including students' problems, e.g.

It helps in finding ways to solve immediate problems. Action research project can help me identify the needs of my student. It can bring an understanding of their situation and how I can help them.

In general, these results are consistent with the findings that teachers have positive conceptions about the role of action research in their practice (Brookmyer, quoted by Pine, 2009a). In the same vein, Alber and Nelson (2002), Falk and Blumenreich (2005), and Mills (2003) viewed classroom research as valuable for classroom learning.

While the mean rating for all items in the survey were above the mid-point value, it is important to note that the teachers have the least agreement with the item that pertains to how they perceive themselves as teacher-researcher. One may speculate that some teachers who hold a positive view on the benefit or value of action research do not necessarily see themselves as researchers. Indeed, some of the teachers' responses to the open-ended questions reflect this possibility. e.g.

I am a teacher, not a researcher.

No, as a teacher, our task is to teach, not to research.

McDonough (2006) reported the same finding that teachers do not regard research as one of their primary responsibilities. Overall, the results suggest that the Filipino teachers in this study have a positive conception on the benefit and value of conducting an action research. These results can have positive implications on cultivating the culture of research among classroom teachers, which may facilitate their engagement in action research.

Teachers' preferred area of study

In addition, the participants were also asked to indicate their preferred area of study if and when they conduct action research. As seen in Table 2, out of the 234 participants who responded to the said item, many of them indicated that they want to conduct action research in the area of curriculum. This is followed by the area of assessment, and the least preferred was the area of pedagogy.

These results indicate that the main research interest for many teachers is curriculum, which contrasts with other studies that focused on action research in pedagogy (e.g. Bullock & Muschamp, 2004; Junor Clarke & Fourmillier, 2012; Norton, 2009). In fact, the participants' verbatim answers to the open-ended section of the survey instrument contradicted their recorded preferred area of research - curriculum, e.g.

Doing action research will help to attend to the needs of students and will also help improve your teaching performance and strategies. Help improve my teaching style.

Improving quality education through enhancing classroom instructions.

Improve the instructional skills and teaching strategies of the teacher.

Their identified preference as ranked (curriculum) may be influenced by the difficulty they encountered in undergoing teacher training for the K-12 transition (Department of Education Discussion Paper, 2010). They seemed to perceive that they need action in the area of curriculum where they currently experience difficulty and later thought of their classrooms when this preference was further probed in the open-ended section of the survey instrument which directed the teachers to reflect on how action research would impact their teaching activities.

Impact of conducting action research.

Further exploration on teachers' needs and challenges in conducting action research, using open-ended questions of the survey instrument, deduced the impact of conducting AR in terms of its long-lasting effects on the teachers' professional career; application of results to instructional practice; and on teacher empowerment.

The action research project helps me to become more passionate in the field of teaching and helps me believe that any conflict/problem that my students encounter has a solution.

Fifty-four responses on the insights gained from and learning experiences in doing action research relate to its impact on teachers' instructional practice. While it can be recalled that curriculum and not pedagogy emerged as the most preferred area for conducting action research among the respondents, on the other hand, benefits for instructional practice (which closely relates with pedagogy) stood out among the perceived long-lasting effects of doing action research. The preference for curriculum may be attributed to the respondents' apprehension towards the newly-implemented K-12 curriculum which compels them to be equipped to adjust to their expanded roles. The need to be familiar with K-12 curriculum may have led them to prefer "curriculum" over "pedagogy" for doing action research, but the end goal is still to improve their instructional practice. Furthermore, this result revealed the essence of doing action research where the teachers empower themselves to do something new to improve their own daily school practices. One respondent mentioned that "AR helps me update my instructional practice and compare practice with other teachers." This result also corroborates those of previous studies which have noted the importance of doing action research in understanding

classroom situations to improve the quality of teaching and learning process (Mills, 2011).

Skills development as third in rank among the generated themes refers to the process of developing certain skills in doing action research. Some of the teachers believed that doing action research not only enhances their instructional practice but also their research skills as reflected in one of the responses, "I believe that in action research, I could further develop not only my skills in teaching but also my research skills." One respondent also mentioned that doing action research "provides updates on the latest trends regarding pedagogy and how to handle critical issues most especially on student learning." These findings agree with the claims of previous studies (Hine, 2013; Hine & Lavery, 2014; Tomlinson, 1995), that conducting action research brings in an increased sense of professionalism in education

The benefit of doing action research on teacher's career growth as well as on the overall performance of the school is another promising theme generated under the lasting effect of doing action research. The participants saw this lasting effect as an answer to their need to conduct AR on a yearly basis as encouraged by the Philippine education system to help provide the agency and the state with inputs for curricular enhancement or reform initiatives (Department of Education Order 71 s.2009; Department of Education Order 29 s.2005). As to professional development, incentives are given to teachers who complete an action research project. In fact, teachers who produce action research earn corresponding merit points under the performance evaluation system, whereas points are also earned for doing action research depending on the level of dissemination and utilisation (school, district, division) for teachers applying as school principals (Department of Education Order 42 s.2007). Furthermore, schools with more action research produced will gain points under the Performance-Based Bonus Incentive System. As may be inferred from this result, the interplay of the intrinsic and extrinsic forms of motivation can be discerned. This result may imply that teachers are driven to pursue activities towards professional growth that consequently give them a sense of fulfilment. On the other hand, as they have been considered "overworked but underpaid" agents of change, they are motivated to acquire financial rewards coming from their contribution to the overall performance of the school where they are teaching.

It is worth noting that there were very few responses which focused on the impact of action research on how the teachers plan for instruction

and for curriculum. Carr and Kemmis (1986) stressed that teaching can only be understood by reference to the framework of thought in terms of which its practitioners make sense of what they are doing, and action research cuts across the theory-practice divide. Instructional planning is an area that seems to be less considered as a long lasting benefit of conducting action research.

Action research impact on teacher improvement
Teachers become more effective when encouraged to examine and assess their own work and consider ways of working differently, traits to be considered as empowered teachers. Table 4 shows how the teachers felt empowered when they engaged in this activity. The themes with corresponding definitions and frequency of occurrence generated from the rich qualitative data provide evidence of teacher empowerment when engaging in action research.

The most frequent response in Table 4 represents the theme which deals with the conceptual understanding of action research as a way to examine one's own practice. This implies how engaging in action research encourages teachers to become more reflective and self-evaluative practitioners. One respondent emphasised, "Action research help us to collect data to use in decision making and to become more effective in teaching", while another respondent surmised that action research "gives you a chance to examine yourself as a teacher and how effective you are." Another notable response concludes that "Action research can help in my teaching through developing my skills in understanding the diversity of my chosen vocation."

These responses reinforce the claims of literature which highlights how conducting action research allows teachers to better understand and improve their practice (Noffke, 1997) and empower them to be responsible for their own learning and for others' (Savaskan, 2013). This result also shows the potential of action research to transform teachers' perceived position from being objects of reform to sources and agents of reform as claimed by Pine (2009b) in his study, because the process affords them an opportunity to share in knowledge or theory building, transforming not only their classroom contexts but the wider educational landscape as well.

Acquisition of necessary skills embodied the theme which ranked second (44 responses). The following are the most significant responses which mirrored this theme:

Through action research, you will master various effective teaching strategies.

It also develops my problem-solving skills, choosing the appropriate methods or approach.

It enhances efficiency in teaching.

Viewed from the context of action research as a cyclical yet dynamic process of reflection-action-reflection, acquisition of research skills such as inquiry, data collection and analysis, decision-making, and problem-solving may be possible. Teachers also perceived action research as an opportunity to enhance their content knowledge in their areas of specialisation which helps them achieve content mastery, with 27 responses counted under this theme.

Through action research, you will become globally competitive because of new ideas and knowledge you receive.

Acting on the new information generated from action research makes the teacher more in touch with reality.

That action research is a powerful platform for professional development is fostered in this finding. In the same light, two of the identified advantages of action research for teachers are: 1) improves teachers' decision-making skills; and 2) increases opportunities to gain knowledge and skills in research methodology and applications (Pine, 2009b).

Action research application to practice.

When teachers were asked how action research will be applied to practice, varied responses surfaced and generated significant themes as presented in Table 5. The majority of responses point to enhancement of reflective practice which corroborates the study of Johnson and Button (2000) emphasising action research as a powerful form of professional development for teachers. Through action research, teachers become more reflective of what they do in the classroom, leading them to continually seek ways to improve what they are doing.

Many of the teachers believed that doing action research will help them evaluate their teaching methods and classroom practices objectively, identify student difficulties, and devise appropriate interventions more systematically and scientifically. Most of the responses articulate how action research will improve their own instructional practices, empower them with ways to solve practical problems in the classroom and ultimately benefit their students.

Amidst the dynamically changing contexts in education, surveyed literature reveals that doing action research not only helps teachers become more effective but also provides them with a personally fulfilling experience, being open to self-evaluation and giving more thoughtful considera-

tion to their learners' welfare. As shown in Table 5, the eight generated categories or themes suggest that action research results can be applied and utilised in many ways, most obviously those pertaining to enhancement of reflective practice. This finding supports previous studies (Brookmyer, 2007, quoted by Pine, 2009a; Johnson & Button, 2000; O'Connor, Green & Anderson, 2006) which claimed that action research improves teachers' reflective practices in the classroom. Personal qualities are also developed because a teacher becomes more appreciative of others' contributions in the field, whilst also becoming more open to constructive criticisms. In fact, some of the participants said that action research refines one's character because it makes one aware of the areas he/she needs to improve on, encourages them to be receptive of their students' suggestions, and more confident in exploring new and better ways of addressing students' problems. Researchers confirm that action research encourages openness to new ideas (Johnson & Button, 2000) and to learning new things, improves their level of confidence, and boosts their morale (Furlong & Sainsbury, 2005). This finding also suggests that although doing action research may be externally driven, teachers may find the experience as also intrinsically rewarding.

Second in rank pertained to how action research may lead to discovering new and enhancing existing sound learning principles and theories in teaching. Their responses indicate that they believed that conducting action research brings to the fore new and promising theories and also allows for rethinking of existing practices. Samples of verbatim responses with strong reference to this theme include the following:

A lot of ideas are discovered through research which will improve one's instructional practices.

Doing action research allows us to think of best teaching strategies. Action research reveals which instructional practices are more effective. Action research allows us to solve classroom problems scientifically.

This highlights the potential of action research as a tool to come up with solutions and interventions to classroom concerns on pedagogy, student behavior, and achievement.

Among the themes, the least ranked concerns the alignment of learning outcomes to national content and performance standards. Though raising student achievement is perceived as a priority area for doing action research, for most teachers, improving instructional practices to raise and enhance student achievement is a basic priority. On the other hand, ensuring that student achievement aligns with the prescriptions of the curricu-

lum was the least articulated, with only two responses falling under this category. This finding implies that while teachers are seriously committed to ensuring that students learn in the class, expanding and elevating motives for conducting action research to include the national context may have yet to be emphasised. However, the fact that this theme was generated (though least ranked) may be an indication that some teachers could also be mindful of the potential contribution of action research in ensuring that knowledge and skills taught in the classroom must be in accord with national standards. In the Philippines, education is hailed as the central strategy for human capital development, poverty reduction, and building national competitiveness (Philippine Development Plan 2011-2016). This makes it imperative that teachers and administrators ensure that these initiatives support national goals and priorities as they explore transformative possibilities in their own contexts.

Responses were observed that catered to more specific practical applications of action research in the current streams of instructional concerns, like generation of knowledge which is discipline-specific, contributing to holistic development of learners, promoting culturally-responsive pedagogies, and creating support mechanisms to facilitate effective teaching and learning. These themes suggest an increased awareness among teachers of the power of action research as a tool to confront the challenges wrought by the emerging issues and continuing problems in education from a broader perspective.

Difficulty and non-difficulty in conducting action research The needs and challenges of the teachers in conducting action research were identified through a rating scale on difficulty and non-difficulty in the different components of action research and an open-ended question on problems and/or difficulties they anticipate encountering while engaging in action research. The rating scale was composed of eight items using a five-point scale. A middle option was included as the items were to be rated in terms of levels of difficulty, from no difficulty to extreme level of difficulty.

Specifically, 'Making a relevant presentation of the project and writing an article for publication' was the component with the highest mean score of 3.34. Recently, the Department of Education has included research as one area to be looked into when evaluating teachers' performances for promotion purposes. Aside from reputable national and international journals, some school districts or divisions manage their own journals to which teachers can submit their articles for knowledge sharing

and dissemination. Other components with high mean scores were 'Developing the processes of how to do research and collecting evidence'; 'Searching for relevant literature'; 'Analysing qualitative data'; and 'Using technology in statistical analysis', with mean scores of 3.26, 3.17, 3.13 and 3.12, respectively. Statistics also came out as a difficulty in the study of Burns (2010) while collecting evidence in Rimando et al. (2015). On the other hand, using technology in 'Data presentation' and 'Bibliographical entries' were equally the components with the lowest mean scores of 2.87, followed by 'Identifying issues and problems to be investigated' ($M = 2.97$). That selecting a topic for research was not amongst the top difficulties of the teachers involved in this study is inconsistent with the findings of Burns (2010) who reported that identifying an initial idea is one of the several areas on which teachers need further awareness and training.

The aforementioned data are supported by qualitative responses of the teachers to an open-ended question about their anticipated problems/difficulties while engaging in action research. Below are samples of responses.

Limited sources of theories due to limited materials, books, articles.

How to gather valid and accurate data and information.

Gathering of data for the action research.

I anticipate having problems collecting data.

I might find difficulties in gathering data and information from previous researches.

It should be mentioned that making a presentation of the project and writing an article for publication came out as a major difficulty, even if they were not offered as a response to the open-ended question on difficulties. Perhaps the teachers were focused on thinking about problems that they would encounter while engaging in action research, and not after having conducted it, as the open-ended question prompted them to do.

Also, the bulk of the responses by the teachers pointed out that time and lack of financial support were their main difficulties and may be inferred as the underlying factor of all difficulties. Given the demanding nature of their job and workload, teachers have little time and energy left for research which, likewise a work of its own, is demanding time, energy, and commitment from individuals engaged in it. Below are some sample responses from the teachers.

Time and financial availability.

Time because of work load.

Time constraint gathering of experimental data.

The difficulties in engaging action research: time, health, money.

That time was found in the present research to be one of the difficulties of teachers in conducting research confirms the literature (Atay, 2006; Hancock, 1997; Taskeen, Shehzadi, Khan & Saleem, 2014; Vasquez (n.d); Vec & Rupar, 2015). Thus, reforms in workloads and financial support to teachers should be reiterated to achieve quality education through quality research by teachers.

Conclusion and recommendations

Action research as a powerful platform for teachers' professional development should find its best expression in the transformation of the classroom. Since teachers study and work on their own problems in their classrooms, they are afforded the privilege to examine their own teaching, analyse classroom contexts from a broader and scientific perspective and to seriously engage in reflective practice. Thus, conducting action research provides beneficial and enabling experiences which may impact teachers' professional career development; empower them to transform their classrooms; and contribute to the community of practice. To achieve optimal results AR has to offer, a complete understanding of all the facets of AR is a necessity. Teachers' conception of AR may initially provide evidence of how they may use AR in their teaching practices. With a positive conception, Filipino teachers may attain AR's optimal strength in classroom practices, which may consequently be realised through teacher professional development.

The study provided several strong points for designing teacher professional development programs on AR. The research results argued that teachers' perception of AR can enhance both their practice and student learning. Though there were accounts of difficulty in conducting action research, the teachers still saw the benefits of this educative process in student achievement primarily through self-improvement. The teachers believe in improving themselves as a means of providing better and quality education to learners; thus, they seek to enhance their professional competence, instructional practice, and skill development (Darling-Hammond, 2012; Hanushek, 2011; Rivkin, Hanushek & Kain, 2005).

Teachers' beliefs about self-improvement are triggered by their perception that they can address students' diverse needs by examining their practice and acquiring skills and mastery of the content. Accordingly, these teachers believed that AR-influenced professional development may develop and enhance their teaching and inculcate reflective practice by providing sound learning theories applied to teaching. They viewed action

research to empower them to be responsible for their own learning and their students', encourage them to be more reflective, challenge them to build and refine their personal character, and expand their professional competence. Application of action research to practice yields its best contribution to professional development as teachers become more reflective about what they do in the classroom and constantly seek ways to improve their craft knowledge for better student achievement. Doing action research also leads to increased self-knowledge which translates into improvement in one's personal character and professional image. Similarly, Yoon, Duncan, Lee, Scalloss and Shapley (2007) argued that fragmented teacher training lasting 14 hours or less show no significant effect on student learning (Darling-Hammond, Wei, Anderson, Richardson & Orphanos, 2009). Darling-Hammond (2012) pushed for job-embedded professional development programs to provide teachers with collaborative learning (Ronfeldt et al., 2015), links between curriculum, assessment, and professional-learning decisions in the context of teaching specific content (Blank, de las Alas & Smith, 2008; Blank & de las Alas, 2010; Heller, Daehler, Wong, Shinohara & Miratrix, 2012), active learning, deeper knowledge of content and how to teach it, and sustained learning over multiple days and weeks (Vega, 2013). These identified benefits of job-embedded professional development provide the same concept of benefits and long-lasting effects of action research as perceived by the teachers.

It seems critical that teachers believe in the power of action research to impact their teaching practice. Pursuing this path, however, needs a concrete and complete development of skills. Findings of the study suggest that though teachers had prior knowledge and skills in doing AR, they still felt they lacked certain skills for their complete immersion in AR. These identified perceived needs, challenges, and conceptions on AR and its lasting impact gravitate towards professional development and improvement of student achievement. Subsequently, though teachers focused on pedagogy and instructional practices as areas needing improvement through action research, they also want to further the improvement as manifested in their interest in solving issues and concerns related to curriculum, which may be on a national scale. Luciano (2014) and Grouws, Tarr, Chavez, Sears, Soria and Taylan (2013) saw the same thrust on curriculum to enhance student achievement.

With the aforementioned benefits and perceived conceptions of and needs on action research of teachers, action research-influenced professional development programs promise a myriad of avenues to improve

teachers' instructional practices and their classroom contexts, programs, and mechanisms, to ensure that benefits are shared with the larger community, and results are translated into deliverable or implementable forms. A programmatic approach must be created and implemented, transcending the impact of action research from the individual to the wider community, which transforms not only one teacher's classroom but also offers other teachers the opportunity to try the potential of the new theory or strategy and make further enhancements (Morales, 2016). Providing avenues for teachers to share the products of their action research through forums and publications not only allows other teachers in the field to learn from them but also inspires them to take on their own reflective and research-based practice.

Mechanisms or programs that will sustain teachers' motivation to engage in action research must also be set in place (Johnson, 2012). Incentivisation and recognition of excellent and high-impact action research are among the possible options. Participatory and collaborative action research may be adopted as a mechanism whereby students also participate, or mentoring opportunities are created for novice teachers. In this way AR can facilitate sharing with both students and other teachers the fulfilling experience of doing action research, and act as a springboard to influence students to acquire the good habits and values endemic in doing action research (Morales, 2016). Chosen approaches or mechanisms may be formalised and initiated at the institutional level, extending to the national level, to pursue and develop Filipinos who are engaged citizens, and to achieve global standards.

This study, however, considered only the preferences and perceptions, conceptions of and needs on action research, expressed by teachers in the Philippine's capital. The study may have more themes if other cultural and language backgrounds of students and teachers are considered. As emphasised by the teachers, time is found to be a significant factor in the conduct of action research; thus, education agencies and universities may work on teacher professional development programs using the mentoring perspectives of PAR (Morales, 2016) and the attributes of lesson study to provide collaboration and efficiency (Doig & Groves, 2011).

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